
Precision Engagement

Overview

Precision Engagement is the ability of joint forces to locate, discern, and track objectives or targets; select, organize, and use the correct systems to engage or attack; generate desired effects; assess results; and reengage with decisive speed and overwhelming effect, as required, throughout the full range of military operations.

Precision engagement is effects-based engagement that is relevant to all types of operations. Its success depends on in-depth analysis to identify and locate critical nodes and targets. The pivotal characteristic of Precision Engagement is the linking of sensors, delivery systems, and effects.

It is imperative that future Fire Support warfighting Operational and Organizational (O&O) concepts be nested in the Army Vision. To properly align the Fire Support Battlefield Operating System with Army Transformation, the following imperatives are essential. These include:

- Fires must operate within a joint and combined “System of Systems.”
- Fires must have the same strategic deployability and tactical mobility as maneuver.
- Fires must maximize commonality of organizations and equipment.

- Fires must capitalize on munitions lethality to reduce our logistics footprint.
- Fires are dependant on the Army National Guard (ARNG) to provide required combat power.
- Fires must fully leverage information technologies in order to be relevant.

Challenges abound in developing fires capable of meeting the requirements above. These include:

- Most of our current and emerging capabilities were created to offset the Soviet threat on European terrain. Desert Storm requirements were similar. Future capabilities must be adapted to new requirements.
- Effects were largely dependent upon massed fires and area targets. This is not likely to be the case in the future.
- There will be a continuing need to engage mobile, time-critical targets.
- Many of our current target acquisition assets are not discriminatory in depicting paramilitary and unconventional forces. This discrimination is likely to be a future need.
- Fusion of intelligence for targeting is starting to emerge but, in many cases, lacks real-time speed.
- Many countries have overmatch capability in quantity or range for precision strike capability.

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- Proliferation of threat forces that can use sanctuary positions with the protection of urban and complex environments is keyed to the perception of the U.S. aversion to unrestricted collateral damage.

These challenges will generate and necessitate changes of varying degrees that affect our Doctrine, Training, Leader Development, Organization, Materiel, and Soldier Systems (DTLOMS). As the Army continues to evolve to meet future requirements, Fire Support must and will continue to evolve as well.

Fire Support Modernization in Support of Transformation

Legacy Force

Near-term modernization actions consist of both equipment modernization and equipment recapitalization necessary to achieve the maximum capability within the allocated budget. Equipment modernization strives to make incremental changes to existing systems, embedding situation awareness and maintaining digitization momentum while extending their lives and maintaining their overmatch until they can be replaced. Fielding of Crusader to the Counterattack Corps and subsequently cascading M109A6 Paladins to displace older M109 series howitzers in the inventory, upgrading of the Firefinder radar, and fielding of Advanced Field Artillery Tactical Data System (AFATDS) are key to this effort. The recapitalization of the MLRS (M270A1), the AN/TPQ-36 Firefinder Radar, and the Field Artillery Ammunition Supply Vehicle (FAASV) will extend the useful life of this equipment and consequently enhance substantially

the warfighting capability of the Counterattack Corps.

To shape the battlespace and conduct decisive operations, the Army will move towards munitions centrality. Rockets and missiles will be developed and procured which extend their range and lethality and provide the Corps commander with a true organic deep strike capability. The Army will also begin production of smart and brilliant munitions, greatly increasing lethality against selected high-value targets while decreasing ammunition, and thus logistical, requirements.

Interim Force

In the mid-term, the Army will complete development and begin to field systems required to fully support the requirements of the Interim Force. We will begin procurement of some of the next generation of systems in support of both light and heavy forces. Key among these are the Crusader howitzer system, the lightweight 155mm (LW155) howitzer, the High Mobility Artillery Rocket Systems (HIMARS), and the AN/TPQ-47 Firefinder Radar System. LW155 and HIMARS will replace most M198 howitzers in the Army and provide a mobile, deployable deep strike capability for early entry operations. LW155 will also be fielded to the Interim Brigade Combat Teams (IBCTs) beginning in FY06. HIMARS, while not organic to the IBCTs will also be available to provide deep fires as needed. Munitions centrality will continue with a suite of long-range precision strike weapons that compensate for a smaller force and a Firefinder AN/TPQ 47 radar capable of targeting at operational depths. Profiler, the next generation

meteorological system, will be fielded to the entire Force and will provide for target area meteorological information critical to accurate fires.

Objective Force

In the far-term, munitions science and technology should provide for the ability to develop, test and evaluate, and procure smaller, lighter, more mobile weapons platforms capable of effective fire support throughout the battlefield. There are a number of FCS designs currently being considered by the Army, and no decision is expected for several years. Crusader, recently designated as a legacy-to-objective system, will operate within the Objective Force. This revolutionary cannon system will provide indirect fires accurately to 50km across the full spectrum of conflict. HIMARS P3I will provide a lightweight, deployable weapons platform to support the Objective Force Division and EAD with Guided MLRS (GMLRS) and ATACMS missiles. This platform will be developed to support specific munitions. Technological advances will be applied to target location accuracy, artillery acquisition, and area meteorology systems in support of the Objective Force. Advances in composite materials and ballistic protection technology will be applied to existing systems to reduce weight and increase deployability.

Description of Key Equipment

Crusader

Description. Crusader is the Army's highest priority fire support system and a technology carrier for future DoD

systems. Crusader is a fully automated, networked, robotic, fire support system consisting of a self-propelled, 155mm howitzer and its dedicated resupply vehicle. This system provides significant increases in range, accuracy, rate of fire, lethality, mobility and survivability over the current M109 series fleet.



Operational Requirement. Crusader will be the indirect fire support system providing fires in support of maneuver forces on the future battlefield. Crusader enables the United States to regain indirect fires dominance, while maximizing the total capabilities of the Brigade Combat Team, by unleashing the maneuver force. Crusader will be the keystone fire support system of the Army's Counterattack Corps and an integral component of the future Army as the Army's legacy-to-objective cannon system. Crusader provides a strategically mobile, cost effective program, providing full-spectrum fire support for maneuver forces. Crusader will increase the overall combat effectiveness of the total force by up to 53%, while reducing the logistics burden 15-25%. The system provides three times the operational capability of current systems with the same strategic lift. Crusader will revolutionize the future battlefield providing unmatched rate of

fire, responsiveness and accuracy. Crusader restores U.S. Army fire support dominance.

Program Status. Crusader is on track to begin fielding in FY08. Milestone B is presently scheduled for 3QFY03. The program is fully funded as we look to procure 480 systems.

ATACMS

Description.

ATACMS missiles are the Army or Land Component Commanders' organic deep strike weapons to support Joint Force operations.



The ATACMS program is a classic spiral developmental effort with missiles being developed in a logical series of improvements to range, accuracy, or lethality. Missile production is continuous. Each new block improvement, when ready, cut into the existing production line. ATACMS Block I proved its effectiveness during Operation Desert Storm.

Operational Requirement. ATACMS Block IA increases maximum range from 165km (Block I) to 300km, by reducing the number of Anti-Personnel/Anti-Materiel (APAM) bomblets in its payload, but greatly increases accuracy and precision attack effects by incorporating GPS-augmented guidance. Block I and IA missiles are effective against anti-personnel/anti-materiel soft targets. ATACMS Block II (in LRIP) significantly improves lethality and expands the target set by incorporating BAT brilliant anti-

armor submunitions to effectively engage moving armor formations. Incorporation of the P3I BAT submunition in the Block II missile will further expand the target set to include moving or cold, stationary high value targets including Multiple Rocket Launchers (MRL), Surface-to-Surface Missile Transporter Erector Launchers (SSM TEL) and threat Air Defense Artillery (ADA) sites. The ATACMS Unitary missile will accurately engage point targets, at ranges to 270km, with minimal collateral damage. Blocks IA, II, and ATACMS Unitary will be fired from HIMARS, and from HIMARS P3I launchers thereby support early entry Objective Force unit. Legacy Counterattack Force M270A1 launchers can also fire them; thus providing a critical capability during the interim period of operational risk while the Army transforms.

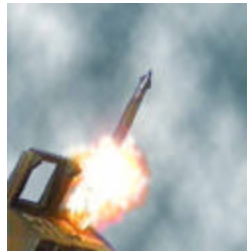
Program Status. The ATACMS program is currently being restructured to increase developmental and system characterization work. As a result the Army decision was to limit Block II-BAT procurement and focus on Block II-P3I BAT procurement. Block II/P3I BAT LRIP procurement begins in FY04 with an FY06 Initial Operational Capability (IOC). A small number of ATACMS Unitary missiles (43) procured under a Quick Reaction Program funded by Congress in FY01 have been delivered. Blocks IA, II, and ATACMS Unitary will be fired from HIMARS, and from HIMARS P3I launchers, supporting early entry, interim, and objective forces. Legacy Counterattack Force M270A1 launchers will also fire them; providing a critical capability during the period of operational risk while the Army transforms. The ATACMS program is being restructured

during the budget planning process. Block II/BAT procurement will be limited. Block II/P3I BAT LRIP procurement begins in FY05 for an FY06 Initial Operational Capability (IOC). A small number of ATACMS Unitary missiles under a Quick Reaction Program funded by Congress in FY01.

Guided MLRS (GMLRS) Rocket

Description.

GMLRS supports the Objective Force by providing division and corps commanders with a precision munitions capability to ranges of 15- 60KM. GMLRS is a major upgrade to the M26 series MLRS rocket that integrates a GPS-augmented Guidance and Control (C&C) package and a new rocket motor to achieve greater range and precision accuracy. The improvement in accuracy (<3Mil CEP) will reduce the number of rockets required to defeat targets at 60KM or greater ranges, reduce the number of launchers required per fire mission, reduce collateral damage, and directly contribute to reducing the logistical footprint of Objective Forces. A self-destruct fuze will reduce hazardous duds to <1%. Guided MLRS Unitary (GMLRS-Unitary) will provide Objective Forces with a low-collateral damage rocket, capable of destroying high payoff surface targets in complex and urban terrain, with pinpoint accuracy.



Operational Requirement. GMLRS rockets will replace M26 Rockets. The M26 rocket will begin shelf life expiration in FY07 and will be completely expired by

FY16. GMLRS and GMLRS Unitary will be fired from HIMARS, and from HIMARS P3I launchers, supporting early entry, interim, and objective forces. GMLRS and GMLRS-Unitary will also be fired by Legacy Counterattack Force M270A1 launchers; providing a critical capability during the period of operational risk while the Army transforms.

Program Status. GMLRS Engineering and Manufacturing Development (EMD) is an International Program with the United Kingdom, Germany, France and Italy, and with a RDTE 50/50 cost share agreement between US and European partners. The United States is managing the prime contract. Low-rate initial production is planned to start in FY03. The programmed GMLRS IOC is 2QFY06. GMLRS Unitary is in concept development, and requires funding for RDTE.

High Mobility Artillery Rocket (HIMARS)



Description. The current HIMARS is a Legacy to Objective System. HIMARS will provide early entry forces with MLRS capability in a lighter weight, more deployable system. Mounted on a medium tactical vehicle, HIMARS is transportable, fully combat loaded, on a C-130 aircraft. It provides full MLRS Family of Munitions capability yet requires 70% fewer airlift resources to transport a battery.

Operational Requirement. The High Mobility Artillery Rocket System is a C-130 transportable, wheeled version of the MLRS launcher that is mounted on a five ton Family of Medium Tactical Vehicles (FMTV) truck chassis. It will fire the entire MLRS family of rockets and missiles. HIMARS has the same command, control, and communications (C3), as well as the same three-man crew, as the M270/A1 launcher, but carries only one rocket or missile launch pod/container, containing one Army Tactical Missile or six rockets. The HIMARS program has been accelerated to achieve fielding of two battalions in FY05 versus one. HIMARS will be fielded to both AC and RC battalions supporting early entry, Interim, and Objective Forces. The HIMARS P3I will support the Objective Force.

Program Status. HIMARS participated in the Rapid Force Projection Initiative (RFPI) Advanced Concept Technology Demonstration (ACTD) in 1998. On 26 September 2000, Headquarters, Department of the Army (HQDA) approved XVIII Airborne Corps Artillery retention of three prototypes as an operational capability until HIMARS fielding in FY05. HIMARS is in Engineering and Manufacturing Development (EMD). FUE is programmed for 2QFY05. The Marines plan to acquire a total of 45 launchers for an FY08 Initial Operating Capability.

Mortars

Description. The Army continues to seek improvements in indirect fire systems that directly support Light forces to improve overall lethality, survivability and sustainability on the battlefield. Rapidly responsive and accurate mortars

cannot only place fires at the right place but can mean the difference in the tactical fight where time is critical.

XM95 Mortar Fire Control System (MFCS). The MFCS will provide a Paladin like capability for the carrier mounted 120mm system (M1064), with future applications for the Interim Armored Vehicle–Mortar Carrier (IAV-MC), towed 120mm system, and man-transportable 81mm system now in development. The onboard navigation and tube laying capability will reduce call for fire to less than one minute, which is the hallmark of the "shoot and scoot" capability to ensure survivability against enemy counter fires. Its accuracy reduces the CEP of standard ammunition by nearly 400%.

Operational Requirement. Mortars serve multiple users with a wide variety of munitions. Their low system weight, high rate of fire, and high angle of attack makes them ideal for providing overwhelming indirect fire effects with a low logistics' burden on today's and the future battlefield. 120mm mortars are mounted in tracked carriers (M1064) for the Heavy & Mechanized Divisions, or towed behind HMMWVs for Armored Cavalry Regiments. 60mm and 81mm mortars are the Company and Battalion fire support assets for Light Divisions.

Program Status. Mortar programs are funded through FY07.

Target Acquisition

The Army continues to develop systems to acquire and target the enemy with increased range and precision. Key to decisive victory is detection, acquisition, and engagement of enemy platforms in direct and indirect engagements. Two

systems available to enhance our ability to acquire, target, and defeat enemy forces are the Lightweight Laser Designator Rangefinder (LLDR) and the AN/TPQ-47 (Q47) Firefinder Radar.

Lightweight Laser Designator Rangefinder (LLDR)



Description. The LLDR is a man-portable, thirty-five pound, long-range fire support targeting sensor that significantly improves the commander's ability to shape the battlefield through use of indirect and precision fires (artillery, close air support, precision-guided munitions). LLDR can accurately locate, identify, range, self-locate, determine azimuth, vertical angle, and designate hard or soft, stationary or moving targets. LLDR replaces the Ground/Vehicular Laser Locator Designator (G/VLLD) and associated first generation night sight (AN/TAS-4) with a state-of-the-art lightweight targeting system. LLDR, a second generation Forward Looking Infra-Red system, consists of: day imager sensor and optics, thermal imager and optics, GPS, compass, display, laser designator/rangefinder, tripod, system controller, battery and enclosure. LLDR also has the capability of being remotely operated, to include remote laser designation.

Operational Requirement. Our light, interim, and heavy forces must have the

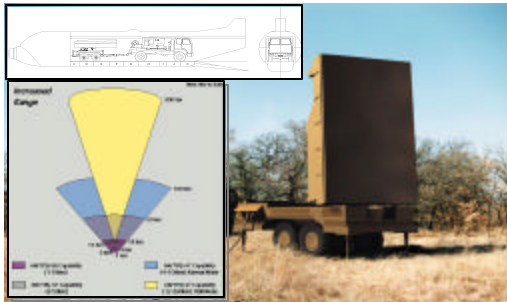
ability to locate, identify, and designate during day and night to provide combat overmatch in symmetrical and asymmetrical environments. Special operations, legacy, interim, and objective force commanders utilize the LLDRs capabilities in portable dismounted and mounted configurations. LLDR provides them with the ability to See First, Understand First, Act First, and Finish Decisively.

Program Status. FY02 is the first year of production for LLDR. The Commander, Special Operations Command, and the Commander, 82nd Airborne Division, have articulated their urgent requirements for this system. The Army will continue to fund and procure this system until fielded to the total force.

AN/TPQ-47 Firefinder Radar

Description. The AN/TPQ-47 Firefinder Radar (Q47) is a highly mobile mortar, artillery, rocket, and tactical missile locating radar. It is capable of detecting missiles to 300 kilometers (k), rockets out to 100k, artillery out to 60k, and mortars to 30k. The system will classify each acquisition as mortar, artillery, rockets, or missiles. The Q47 performance is tailorable to the tactical mission. The Q47 will provide continuous responsive target acquisition throughout all phases of combat operations. Airlift of mission essential equipments requires one C-130 reducing by two sorties the requirement for lift from its legacy system. Enhancing targeting at all echelons of operations, the Q47 is integrated into the targeting structure by interfacing with such systems as current and projected Unmanned Aerial Vehicles (UAVs), Theater Missile Defense (TMD) systems including

Theater High Altitude Area Defense (THAAD), and joint systems such as the Joint Surveillance and Target Attack Radar System (JSTARS) through its interface with the Advanced Field Artillery Tactical Data System (AFATDS).



Operational Requirement. The Q47 is a component of Interim Brigade Combat Teams (IBCTs), Division Target Acquisition Batteries, and Corps Target Acquisition Detachments. In IBCTs the Q47 will provide coverage against artillery fires for over 95% of an IBCT's engagement area. Its rocket and missile mission will allow the maneuver commander to 'see' into the next operational environment providing an intelligence asset unmatched by other forces. The Division and Corps commanders will maximize the Q47s rocket and missile detection capabilities by seeing deep, using the systems detection capabilities, and shaping the future battlefields. The Q47 is also suited for Stability and Support Operations (SASO). Its predecessor, the Firefinder AN/TPQ-37, was instrumental in enforcing the Dayton Peace Accords in Bosnia. The Q47s increased target and impact predict capabilities will allow Task Force and SASO Commanders to identify and accurately locate indirect mortar and artillery fires.

Program Status: The first AN/TPQ-47 is in construction at the manufacturing facility. Electronics and software integration is ongoing, and developmental and operational testing is scheduled in FY03 and FY04. First Unit Equipped is scheduled for FY05.

Summary

As we move through Transformation, it is essential that we selectively modernize and recapitalize the existing force designed to maintain and improve our war-winning edge over any potential adversary. At the same time, fielding the IBCTs will fill an existing capability gap between responsive light forces and the dominant lethality and survivability of our heavy forces. Our strategy requires a combination of near-term tradeoffs and selective force modernization. It balances today's operational requirements for warfighting with development of new technologies and systems to meet the operational requirements of tomorrow's force. The end state is to develop Objective Force fires that are more responsive, lethal and more precise than today's. Programs, to include Crusader, Firefinder, LW155, ATACMS/P3IBAT, and HIMARS must remain on track. Equally important are our munitions enablers to ensure warfighting capabilities throughout Transformation. Both precision munitions and common platforms are essential to reducing the logistics footprint associated with area munitions and for ensuring our relevance in urban and complex terrain. Thus, the need to restore funding for a viable program for Excalibur with integrated "smart" munitions is essential.